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Hitoshi Setsuda

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EXAMINER

SCHINDLER, TRENT L

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/526,491	Applicant(s) SETSUDA ET AL.	
	Examiner TRENT SCHINDLER	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Status of the Claims

1. Claims 1-18 are pending. Claims 1, 3, 9, 10, and 11 have been amended. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

Specification objected

2. The disclosure is objected to because of the following informalities: numerous references to a "plurality" of spacer layers. It is unclear what the "plurality" may be referring to; Examiner assumes for the purpose of examination that the "plurality" refers to the numerous islands produced after exposing and developing the photosensitive spacer layer. Appropriate correction is required.

Objections to the claims

3. Claims 1-18 are objected to because of the following informalities: there are references to a "plurality" of spacer layers in claims 1-3 and 8. It is unclear what the "plurality" may be referring to. Dependent claims 4-7 and 9-18, depending from claims 1-3 and 8, are likewise objected to. Examiner assumes for the purpose of examination that the "plurality" refers to the numerous islands produced after exposing and developing the photosensitive spacer layer. Appropriate correction is required.

Rejections under 35 U.S.C. §102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 2, 12, and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Iwasaki (Pub. No. US 2003/0087179 A1).

6. Regarding claim 2, Iwasaki discloses an unbaked laminate comprising:

- a removable support film (40)
- a photosensitive unbaked spacer material layer formed on said removable support film (34)
- a burnable intermediate layer formed on said spacer material layer, said intermediate layer being water-soluble or water-swellaable (35)

7. Regarding claim 12, Iwasaki discloses the device of claim 2, and further discloses a removable protection film (36,37) covering a surface of said laminate, said surface being on the other side of said removable support film.

8. Regarding claim 14, Iwasaki discloses the device of claim 2, and Iwasaki further discloses the intermediate layer comprising a resin consisting of polyvinyl alcohol, polyvinyl alcohol derivatives, water-soluble cellulose, or mixtures thereof (para. 74, 75).

9. Regarding claim 15, Iwasaki discloses the device of claim 2, and further discloses the intermediate layer having a thickness of 5 micrometers or less (para. 75).

Rejections under 35 U.S.C. §103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 4, and 6-7 are rejected under 35 U.S.C. 103(a) as being anticipated by Kosaka et al.

(Pat. No. 6,207,268 B2; hereinafter '268) in view of Iwasaki.

12. '268 discloses a removable support film (11 in Fig. 3), a release layer (14 in Fig. 3, col. 12 lines 34-46, and col. 47, line 35), a burnable intermediate layer (col. 12, lines 34-46), and a non-photosensitive unbaked dielectric layer formed on said burnable intermediate layer, said dielectric layer consisting of a glass paste material (col. 9, lines 58-62), but does not disclose the intermediate layer being water-soluble or water swellable.

13. However, Iwasaki teaches the use of an intermediate layer made of a burnable, water-soluble material (para. 75), in order to provide sufficient adhesion to a temporary substrate on one side of the intermediate layer, while allowing the release of a layer on the other side of the intermediate layer (para. 25).

14. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the intermediate of layer of Iwasaki in the device of '268, since this would allow sufficient adhesion to the removable support film, while allowing the release of the unbaked dielectric layer.

15. Regarding claim 4, '268 in view of Iwasaki discloses the device of claim 1, and Iwasaki further teaches a removable protection film (40) on an opposite side of the laminate from the support, in order to protect the underlying layers.

16. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the teaching of Iwasaki in the modified device of '268, since a protection film would prevent damage to the various layers of the laminate.

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17. Regarding claim 6, '268 in view of Iwasaki discloses the device of claim 1, and Iwasaki further teaches the intermediate layer comprising a resin consisting of polyvinyl alcohol, polyvinyl alcohol derivatives, water-soluble cellulose, or mixtures thereof (para. 74, 75). Motivation to combine references is the same as that of claim 1.

18. Regarding claim 7, '268 in view of Iwasaki discloses the device of claim 1, and Iwasaki further teaches the intermediate layer having a thickness of 5 micrometers or less (para. 75). Motivation to combine references is the same as that of claim 1.

19. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki in view of Oshio et al. (Pub. No. US 2002/0163108).

20. Iwasaki discloses the device of claim 2, but does not disclose the spacer material being a photosensitive glass which is capable of being developed by the use of water.

21. However, in the same field of endeavor, Oshio teaches a photosensitive glass which is capable of being developed by the use of water, since such a material has a high transparency (para. 6).

22. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the teaching of Oshio in the device of Iwasaki, since this would produce a spacer material having high transparency.

23. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kosaka et al. (Pat. No.: 6,039,622; hereinafter '622), in view of Saegusa (Pat. No. US 6,825,140).

24. '622 discloses a method for producing a front plate of a plasma display device having a glass substrate having a surface on which a plurality of electrodes are formed (col. 5, line 17), a dielectric layer formed on said surface, and a spacer layer formed on said dielectric layer, said method comprising the steps of:

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- forming on said surface of the substrate a non-photosensitive unbaked dielectric layer consisting of a glass paste material (51 in Fig. 5A), a burnable intermediate layer (52 in Fig. 5B), and a photosensitive unbaked spacer material layer (54 in Fig. 5C) in this order
- irradiating said spacer material layer with a patterning light, and developing said spacer material layer, to constitute a patterned spacer material layer (Col. 9, line 2)
- baking said non-photosensitive unbaked dielectric layer, said burnable intermediate layer, and said patterned spacer material layer simultaneously (col. 9, line 13).

25. '622 further discloses that the burnable intermediate layer should comprise the same binder used in the glass paste, but this binder is not disclosed as being water-soluble.

26. However, in the same field of endeavor, Saegusa teaches a binder that is burnable and water-soluble (col 4, line 54), in a non-photosensitive glass paste that is highly reflective (col. 2, line 18).

27. It would have been obvious to a person of ordinary skill in the art to replace the glass paste of '622 with that of Saegusa, thereby making the intermediate layer out of the binder of Saegusa, since this would result in a glass paste having high reflectance.

28. Claims 3 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over '622 in view of Saegusa, and further in view of Oshio.

29. Regarding claim 11, '622 in view of Saegusa discloses the method of claim 8, but does not disclose forming the layers on a removable support film before applying them to the substrate.

30. However, the technique of forming the various layers of a PDP on a removable film before application to a substrate is well-known in the art. Oshio, for example, teaches forming a dielectric glass paste on a removable support film to form a laminate, applying the laminate to a substrate such that the dielectric layer faces the surface of the substrate, and removing the support film (abstract). Such a method results in a high-precision result at low cost (para. 5).

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31. It would have been obvious to a person of ordinary skill in the art at the time the invention was made use the teaching of Oshio (i.e. pre-applying the layers to a removable support film, then transferring them to a substrate) in the modified method of '622 by:

- forming on a removable support film a photosensitive unbaked spacer material layer, a burnable intermediate layer which is water-soluble or water-swellable, and an unbaked non-photosensitive dielectric layer consisting of a glass paste material in this order to prepare a laminate;
- attaching said laminate on said glass substrate so that said unburned dielectric layer faces the surface of said glass substrate, said surface having said electrodes.

32. Regarding claims 9 and 10, '622 in view of Saegusa discloses the method of claim 8, and a person of ordinary skill in the art would understand that the general teaching of Oshio (i.e. pre-applying layers to a removable support film, then transferring them to a substrate) may also be applied to only some of the layers, i.e., forming some layers on the removable support film, and some directly on the substrate, with no substantial difference in the resulting device. It would therefore have been obvious to a person of ordinary skill in the art at the time the invention was made to use the teaching of Oshio in the modified method of '622 by:

- forming on a removable support film a burnable intermediate layer which is water-soluble or water-swellable, and an unbaked dielectric layer consisting of a glass paste material in this order to prepare a laminate
- attaching said laminate on said glass substrate so that said unbaked dielectric layer faces said surface of said glass substrate, said surface having said electrodes
- removing said removable support film from said burnable intermediate layer, to uncover said burnable intermediate layer
- and forming a photosensitive unbaked spacer material layer on said burnable intermediate layer,

33. or

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- forming on a removable support film a photosensitive unbaked spacer material layer, and a burnable intermediate layer which is water-soluble or water-swellaable in this order to prepare a laminate
- forming an unbaked dielectric layer consisting of a glass paste material on the surface of said glass substrate, said surface having said electrodes
- attaching said laminate on said unbaked dielectric layer so that said burnable intermediate layer faces said unbaked dielectric layer

34. since the resulting structure would be substantially the same.

35. Regarding claim 3, the method of claim 11 implies an unbaked laminate for producing a front plate of a plasma display device having a glass substrate having a surface on which a plurality of electrodes are formed, a non-photosensitive dielectric layer formed on said surface, and a plurality of spacer layers formed on said dielectric layer, said laminate comprising:

- a removable support film
- a photosensitive unbaked spacer material layer formed on said removable support film
- a burnable intermediate layer formed on said spacer material layer, said intermediate layer being water-soluble or water-swellaable
- an unbaked dielectric layer formed on said burnable intermediate layer, said dielectric layer consisting of a glass paste material.

36. Regarding claim 13, '622 in view of Saegusa and further in view of Oshio discloses the device of claim 3, but is silent regarding the composition of the spacer material.

37. However, in the same field of endeavor, Oshio teaches a photosensitive glass which is capable of being developed by the use of water, since such a material has a high transparency (para. 6).

38. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the teaching of Oshio in the device of Iwasaki, since this would produce a spacer material having high transparency.

39. Regarding claim 17, '622 in view of Saegusa and further in view of Oshio discloses the device of claim 3, and Saegusa further teaches using a resin consisting of a polyvinyl alcohol derivative (col 4, line 54) as a binder (and thus, as the intermediate layer in the modified device of '622). Motivation to combine references is the same as that of claim 8.

40. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over '622 in view of Saegusa in view of Oshio, further in view of Obiya et al. (Pat. No. 5,919,569).

41. '622 in view of Saegusa and further in view of Oshio discloses the device of claim 3, but does not disclose a removable protection film covering a surface of the laminate.

42. However, in the same field of endeavor, Obiya teaches a removable protection film covering a surface of a laminate, said surface being on the other side of a removable support film, in order to protect the various layers (col. 10, line 20).

43. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the teaching of Obiya in the modified device of '622, since this would protect the various layers of the device.

44. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over '622 in view of Saegusa in view of Oshio, and further in view of Iwasaki.

45. Kosaka in view of Saegusa and further in view of Oshio discloses the device of claim 3, but is silent regarding the thickness of the intermediate layer.

46. However, Iwasaki teaches a layer polyvinyl alcohol serving a similar function as that of the modified '622, i.e. adhering two layers together, and further teaches the layer having a thickness of 5 micrometers or less (para. 42, calculated from a density of polyvinyl alcohol of 1.26 g/cm^3) in order to effectively bind the layers together..

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47. It would have been obvious to person of ordinary skill in the art to use the thickness specified by Iwasaki in the modified device of Kosaka, since this would effectively bind the photosensitive spacer to the dielectric layer.

Response to arguments

48. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

49. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

50. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

51. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRENT SCHINDLER whose telephone number is (571)270-3321. The examiner can normally be reached on Monday through Thursday, 7:30 am to 5:00 pm ET.

52. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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53. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Trent Schindler
Examiner, 2879

/Nimeshkumar Patel/
Supervisory Patent Examiner, Art Unit 2879